

2004

# The Types of Computer Technology Skills Needed by Graduates of the Information Systems Technology Program

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**THE TYPES OF COMPUTER TECHNOLOGY SKILLS  
NEEDED BY GRADUATES  
OF THE INFORMATION SYSTEMS TECHNOLOGY PROGRAM**

A Research Paper  
Presented to the Graduate Faculty of  
The Department of Occupational and Technical Studies  
At Old Dominion University

In Partial Fulfillment  
of the Requirements for the  
Master of Science in Occupational and Technical Studies

By  
Thomas Czerwinski

August 2004

## APPROVAL PAGE

This research paper was prepared by Thomas Czerwinski under the direction of Dr. John M. Ritz in OTED 636, Problems in Occupational and Technical Studies. It was submitted to the Graduate Program Director as partial fulfillment of the requirements for the Degree of Master of Science in Occupational and Technical Studies.

APPROVAL BY: \_\_\_\_\_ DATE: \_\_\_\_\_

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# **CHAPTER I: INTRODUCTION**

# CHAPTER I

## INTRODUCTION

With the market in 2001 spending over \$800 billion on Information Technology (IT), it is one of America's fastest growing industries, encompassing computers, software, telecommunications products and services, Internet and online services, systems integration, and professional services companies (Information Technology Association of America, 2002). Information Technology has advanced at rates, in the last three decades, exceeding any in the history of mankind. Gordon Moore of Intel observed in 1965, that an exponential growth in computer technology had occurred and predicted that this trend would continue into the future (Intel.com, 1999). This trend has continued to the present day and is expected to continue in the years to come.

The explosion of the technology industry has created a large demand for qualified employees. This demand has not been limited to the technology industry itself but also to any business that uses computers and technology in their daily operations. From the cash register at the local supermarket to the computers that control the climate at the state university, employees are needed to maintain, program and trouble-shoot the equipment.

Formal training has become a necessity, and it is no longer an option, in today's job market. Technology has become so complex, that on the job training is no longer enough to keep up with the ever-present changes. In the past, for example, an entry-level assembly line worker could learn to be proficient at a task in a very short time with little instruction and no formal training. Today, an entry-level technology worker must be knowledgeable in computer hardware, software, programming and networking just to



have the opportunity to be eligible for hire. Employees are also expected to keep up with the rapid technological advances in the industry and apply them to the job.

Canon Information Technology Services is the largest civilian technology employer in the Hampton Roads, Virginia area. Canon I.T.S. provides technical support for computer peripherals to its customers within the United States. Canon will be used as the employer for the purpose of this study.

Paul D. Camp Community College has recognized the need for technology training and has developed their curriculum to effectively address employer needs. The college provides both short-term and long-term training programs in Information Systems Technology.

Paul D. Camp Community College (2003) has offered the following vision statement:

“The Information Systems Department helps you study current technology to move toward employment or enhance your current skills, and at the same time helps you develop skills to adapt to the technology you will face tomorrow”

([http://www.pc.cc.va.us/Tureman/IST-Information/IST-Presentation\\_files/frame.htm](http://www.pc.cc.va.us/Tureman/IST-Information/IST-Presentation_files/frame.htm)).

## **STATEMENT OF THE PROBLEM**

The problem of this study was to determine the types of computer technology skills needed by graduates of the Information Systems Technology program at Paul D. Camp Community College to meet the needs of entry-level technicians at Canon Information Technology Systems.

## **RESEARCH GOALS**

To guide a solution to this problem, the following research goals were established:

1. The researcher will identify computer skills required of entry-level technicians at Canon I.T.S.
2. The researcher will identify the types of computer technology courses offered in the IST program at Paul D. Camp Community College.
3. The researcher will align the Canon competency needs with Paul D. Camp Community College Information Systems Technology courses.

## **BACKGROUND AND SIGNIFICANCE**

Local business and industry, governments, schools, departments of economic development, and chambers of commerce have communicated a need for Paul D. Camp Community College to become the crucial point for economic development for its small area. The College's leadership provides a wide-ranging workforce training component that addresses specific industry needs.

The purpose of the Associate in Applied Science degree is to address the rapidly increasing demand for highly skilled, computer and LAN technicians who will assist and support industry and small businesses in the design, development, testing and repair of electronic systems and equipment in the College's service area.

Paul D. Camp Community College currently offers the following specializations within the core Associate in Applied Science degree requirements: Help Desk Support, PC Hardware and Software Support, Network Hardware and Software Support, E-

Commerce and Website Design and Administration. The curriculum was last updated in August, 2002.

Canon U.S.A., Inc. is a leader in professional business and consumer imaging equipment and information systems. Canon's extensive product line and digital solutions enable businesses and consumers worldwide to capture, store, and distribute information. Canon products include color and black-and-white copiers, printers, image filing systems, facsimile machines, cameras and lenses, camcorders, semiconductors, broadcast and optical equipment, flatbed scanners, and other specialized industrial products (www.usa.canon.com, 2003).

Canon Information Technology Services provides technical support for all Canon products. Canon I.T.S. provides support by phone, email and through interactive web content. The company employs approximately 500 people at the Chesapeake, Virginia, facility (Canon Handbook, 2002).

Since approximately half of the positions are entry-level, turnover is constant at a rate of 44% per year, although within the norms for the industry. Canon hires year round for these support positions and prefers to hire graduates from the area community colleges. Successful candidates must be technically knowledgeable as to guide customers and trouble-shoot without ever seeing the computer. Successful candidates must have not only the required technical skills, but also "soft skills". Candidates must be able to relate technical information to the customer in such a way that a non-technical user can understand. Candidates must act and speak professionally and be courteous. Canon requires highly trained individuals who will provide the highest quality work possible.

This study will assist Paul D. Camp Community College by aligning its IT curriculum with the needs of local business and industry.

## **LIMITATIONS**

This study will be limited by using only one local employer and may not provide a large enough sampling to accurately represent the whole Hampton Roads area. The study will address the Associate in Applied Science degree section of the Information Systems Technology program at Paul D. Camp Community College. The researcher will not use non-degree options such as certificate studies. The study will address Paul D. Camp Community College and may not be relevant to any other such institutions. Instructors may use different resources and information when teaching the same class, therefore the researcher will be restricted to the course description in the college catalog and the syllabi for such courses. The study is limited to trainees in the greater Suffolk area. The study is limited to job positions at Canon I.T.S. and may not translate to other companies within the industry.

## **ASSUMPTIONS**

The following assumptions need to be held to accurately conduct this study:

1. Information Systems Technology content continually changes. Courses must keep up with market trends.
2. Information Systems Technology is a specialization, not a stand-alone program. Business is the main program. The Information Systems Technology Department serves many other programs with various courses.

3. Information Systems Technology students are not traditional college students. Students often have short-term educational goals.

## **PROCEDURES**

The researcher will survey the job descriptions and requirements for each technical position at Canon I.T.S. with the cooperation of the Human Resources Department. The researcher will obtain the degree requirements and appropriate course selections for each specialization in the Information Systems Technology degree curriculum from the curriculum advisor at Paul D. Camp Community College. The researcher will compare course and degree requirements at Paul D. Camp Community College with the corresponding job requirements of Canon I.T.S. The researcher will determine whether the degree requirements at Paul D. Camp Community College meet the corresponding job requirements of Canon I.T.S.

## **DEFINITION OF TERMS**

The following terms are defined to assist the reader:

LAN - local area network is a group of computers and associated devices that share a common communications line or wireless link and typically share the resources of a single processor or server within a small geographic area.

Hardware – refers to objects that you can actually touch, like disks, disk drives, display screens, keyboards, printers, boards, and chips.

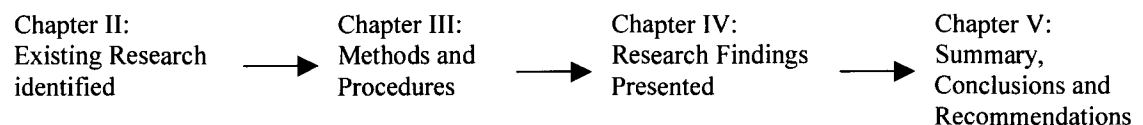
Software – includes the operating system and all the utilities that enable the computer to function. Includes programs that do real work for users.

Soft Skills – the ability to effectively communicate through written and verbal language.

## OVERVIEW OF CHAPTERS

The proliferation of technology in our society has created a need for highly skilled workers in the Information Technology industry. In order to meet this need, community colleges have stepped to the forefront to provide training for prospective employees. Specialized degree programs have been created to meet the various job requirements of the industry. With the rapid pace of technology advancement, training curriculum becomes outdated within a much shorter time than any other course of study. As a result, curriculum must also be updated regularly. In this study, the researcher will attempt to determine if Paul D. Camp Community College’s present curriculum meets the job requirements for positions at Canon I.T.S.

The following chapters will present information to complete this study:



Chapter II provides a background of existing research done by Paul D. Camp Community College. Data will be analyzed and assessed for relevancy and accuracy. The researcher will identify required Information Systems Technology courses in the current program and state course descriptions. Chapter III details the methods and procedures used to identify the data. Survey results will be analyzed for validity and consistency. Chapter IV presents the findings of the research. The researcher will identify the skills that Canon

I.T.S. recommend IST graduates to have. Chapter V summarizes the contributions of the thesis, discusses its limitations and suggests areas for further study.

**CHAPTER II:  
REVIEW OF LITERATURE**



## **CHAPTER II**

### **REVIEW OF LITERATURE**

This chapter will present a description of the specializations within the Information Systems Technology degree program at Paul D. Camp Community College. The researcher will discuss the required IST courses within each specialization. The researcher will also present the job requirements for the following entry-level positions at Canon: Product Support Representative, Network Technician and Sales Administration Specialist.

#### **Paul D. Camp Community College**

The following descriptions are offered in the 2003-2004 College Catalog for Paul D. Camp Community College (2003):

The Help Desk Support curriculum is designed to provide a business and computing background as preparation for a career in computing. This specialization prepares or enhances skills in the use of microcomputers. The program is designed to train a person in the skills most often required with a microcomputer in the business world. Upon completion of the program, students should possess basic skills to be effective with help desk and support work in an office environment (p. 73).

The PC Hardware and Software Support Specialization is designed to provide the student with preparation for a career in PC hardware and software. The importance of studying computing in the context of business is that the student has an area to start applying computer problem solving and

methodology. Upon completion of the program, students should possess basic skills to enter a variety of computing jobs in computer support services including PC Repair and Installation Repair Technicians. Students may also use this program as a step toward advanced study in specialized areas of computing such as the Network Hardware and Software Support Specialization (p. 74).

The Network Hardware and Software Support (Cisco) Specialization advances computer hardware and networking study to include the CISCO Networking Academy content. Students that complete this program should be prepared to take the CCNA (Cisco Certified Network Associate) industry certification exam. They will also be prepared for further CISCO CCNP (Cisco Certified Network Professional) study and a variety of network positions (p. 74).

The E-Commerce Specialization is designed to provide study in the electronic commerce area. The stated purpose of this collaborative project is “to develop skills necessary to find employment in electronic marketing and sales, allow entrepreneurs to move existing businesses to the Internet, or start an Internet business” (p. 72).

The Web Site Design and Administration presents technical content that can help in E-Commerce and other Web Site administration activities. The curriculum includes web development, implementation and deployment with an emphasis on the technical details. Infrastructure, web server setup and administration and security are important areas of emphasis. Upon completion, the student will be ready to address the technical details of implementing a web site and web server (p. 75).

## Course Requirements

The following courses are required for all specializations in the Information Systems Technology program:

IST 117, Introduction to Microcomputer Software (3 credits). This course provides a working introduction to microcomputer software, fundamentals, and applications. It includes operating systems, word processing, spreadsheet, and database software.

IST 128, Introduction to Internet Services (3 credits). This course provides students with a working knowledge of Internet terminology and services including e-mail, WWW browsing, search engines, ftp, telnet and other services. It introduces students to a variety of software packages for these services. This course introduces web page construction with pages generated by web page editors and applications software.

Each specialization within the Information Systems Technology program requires specific courses relating to that field. Help Desk Support requires IST 179, IST 180, IST 133, IST 183, and IST 250. PC Hardware and Software Support requires IST 179, IST 180, IST 203, IST 216, IST 220, and IST 250. Network Hardware and Software Support requires IST 179, IST 180, IST 203, IST 216 and IST 202. Web Site Design and Administration requires IST 203, IST 228, IST 224, IST 226, and IST 229. E-Commerce requires IST 214, IST 223, IST 226, and IST 227.

The following course relates to each specialization in the Information Systems Technology program:

IST 179, Introduction to Microcomputer Hardware (2 credits). This course introduces microcomputer hardware components and their installation (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 180, Introduction to Microcomputer Hardware Laboratory (1 credit). This course provides problem-solving experience to supplement instruction in IST 179. Logical trouble-shooting methods are discussed (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 182, Computer Concepts with Application (3 credits). This course provides an understanding of the terminology and concepts of computer-based systems and the impact of these systems on society. It introduces students to operating systems and software to provide them with the experience of using a microcomputer to support curriculum-based applications as well as other uses such as word processing, database management, and spreadsheets (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 202, Networking Technologies (3 credits). This course focuses on the theory of network operation. It teaches topologies, network topology selection, networking protocols, the OSI model, the DOD model, IP sub netting, and network media transmission techniques (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 203, Administration of Local Area Networks (3 credits). This course focuses on the management of LAN file, print, and communications server activity emphasizing up-time and system backup. It teaches proper structuring of security systems. This course explains print queues, disk management, and other LAN issues. It presents concerns and

issues for the purchase and installation of hardware and software upgrades (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 214, Telecommunication Theory (3 credits). This course surveys components, functions, and relationships of telecommunications areas such as local and wide area networking as well as Internet working. It introduces communication access methods, network architectures, and network control programs, to include private and public networking options (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 216, Personal Computer Hardware Troubleshooting (3 credits). This course identifies the functions of all PC components, and how to diagnose problems with these components and fix them. It teaches how to disassemble and reassemble the PC, how to replace or upgrade components and how to add peripherals such as printers, modems, and scanners. This course studies hardware preventive maintenance and troubleshooting techniques (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 220, Microcomputer: Operating Systems, Architecture, & Hardware (3 credits). This course focuses on microcomputer operating systems, architecture, internal functions, and peripheral equipment interfaces. It teaches memory management, instruction and data formats, basic operating system architecture, and interaction with user software (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 223, Web Page Development and Scripting (3 credits). This course provides in-depth knowledge of appropriate tools and information required to effectively create a Web Page on the World Wide Web. It covers HTML and a scripting language (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 224, Web Server Management (3 credits). This course focuses on the Web Server as the workhouse of the World Wide Web (WWW). It teaches how to set up and maintain a Web server. This course provides in-depth knowledge of Web server operations and provides hands-on experience in installation and maintenance of a Web server. It highlights the role a Web Server plays in the field of e-commerce (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 226, Web Page Design II (3 credits). This course provides students with skills to construct and enhance web sites. Its topics include advanced web page design, multimedia, animation, web site publishing, and web site administration (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 227, Internet Programming I (3 credits). This course provides students with a working knowledge of advanced languages for programming on the Internet to enhance web pages. It introduces the student to Java programming (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 228, Internet Programming II (3 credits). This course provides students with a working knowledge of advanced languages for programming on the Internet to enhance web pages. HTML, JavaScript, DHTML, and Cascading Style Sheets are discussed (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 229, Internet Programming Fundamentals (4 credits). This course introduces terminology and programming applications on a Web Server and several Internet programming tools. It addresses the use of a database with web pages (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

IST 250, Information Center Management (3 credits). This course focuses on management techniques required for analyzing and coordinating software and hardware solutions for end-user needs. It includes evaluation and communication techniques required to provide help desk support necessary to transfer knowledge and enable implementation of a solution (2003-2004 College Catalog for Paul D. Camp Community College, 2003).

## **Canon**

Canon has three entry-level positions at its Chesapeake, Virginia, facility. They are Product Support Representative, Network Technician and Sales Administration Specialist. According to Canon's Human Resources Department, the Product Support Representative position assists external customers, the Network Technician position provides in house user support and the Sales Administration Specialist provides web support.

The following are the job requirements for each position at Canon as provided by their Human Resources Department:

The Product Support Representative position requires a working knowledge of all Windows operating systems. Basis knowledge of computer peripherals, such as printers, scanners and digital cameras is imperative. The position requires a working knowledge of Microsoft Office applications. Basic networking knowledge is a plus, but not required. The Product Support Representative must have extensive knowledge of computer hardware along with trouble-shooting experience. The position requires an understanding of the World Wide Web and proficiency using browser technology (Canon Handbook, 2002).

The Network Technician position requires a working knowledge of all Windows operating systems. Basis knowledge of computer peripherals, such as printers, scanners and digital cameras is imperative. The position requires a working knowledge of Microsoft Office applications. The Network Technician must have extensive knowledge of computer hardware along with trouble-shooting experience. The position requires an understanding of the World Wide Web and proficiency using browser technology. A working knowledge of networking is required. The Network Technician must have an understanding of Novell, networking protocols, the OSI model, IP sub netting, and network media transmission techniques (Canon Handbook, 2002).

The Sales Administration Specialist position requires a working knowledge of all Windows operating systems. The position requires a working knowledge of Microsoft Office applications. The Sales Administration Specialist position requires proficiency in HTML, JavaScript, and web design. An understanding of E-Commerce is preferable. The Sales Administration Specialist position requires a working knowledge of databases and their relation to web application. The position requires a working knowledge of imaging programs such as Adobe Photoshop (Canon Handbook, 2002).

## **Summary**

In this chapter, the researcher identified required Information Systems Technology courses for each specialization within the program at Paul D. Camp Community College. The researcher stated course descriptions for the required courses. It was determined what kinds of skills are required by Canon for each entry-level position.

In Chapter III, the researcher will describe the methods and procedures used to determine what computer skills Information Systems Technology graduates should have.



The chapter will cover the methods of data collection used and the analysis of the final data will be discussed.

**CHAPTER III:  
METHODS AND PROCEDURES**

## **CHAPTER III**

### **METHODS AND PROCEDURES**

Chapter III describes the methods and procedures used in collecting data necessary for this research. A description of the population is discussed. The chapter includes a description of the instrument design used in gathering the data and how it was constructed. The procedures used for collecting and analyzing the data will be discussed.

#### **Description of Population**

The population of this study consisted of the Human Resources Department at Canon and the Information Systems Technology curriculum at Paul D. Camp Community College.

#### **Instrument Design**

The instruments used in this study were questionnaires. The introduction of the questionnaires explained the purpose and use of the information to be gathered. The first questionnaire used for Canon asked for job descriptions and specific computer skills required for entry-level employees. The second questionnaire used for Paul D. Camp Community College focused on programs of study and course descriptions within the Information Systems Technology Department. The questionnaires were administered in interview format. A copy of the questionnaires is included in Appendices A and B of this research report.

#### **Methods of Data Collection**

The researcher used verbal communication with both the Human Resources Department at Canon and Professor Robert L. Tureman at Paul D. Camp Community

College. A personal phone call was made to each party and an interview time and date was scheduled. The interviews were conducted during February of 2004.

The first step to gather data for this study was to obtain the job requirements for entry-level employees at Canon. The Human Resources Department at Canon was contacted and an interview was arranged.

The researcher then contacted Professor Robert L. Tureman, the Information Systems Management Department Head at Paul D. Camp Community College. The researcher interviewed Professor Tureman, who provided program descriptions and course requirements for students in the Information Systems Technology program.

## **Statistical Analysis**

The researcher made a list of all computer technology skills needed for each entry-level position at Canon from the results of the questionnaire answers provided by the Human Resources Department. The researcher then matched each position with an applicable program of study within the Information Systems Technology Program at Paul D. Camp Community College. Finally, the computer skills at Canon were compared to the courses description within each field of study.

## **Summary**

This chapter provided information on the methods and procedures used to gather the data necessary for this research report. The instrument design used was a questionnaire given in interview format. The chapter also explained the methods of data collection and analysis.

In Chapter IV, the researcher will identify the computer skills needed by entry-level Canon employees as compared to the course descriptions in the Information Systems Technology program at Paul D. Camp Community College. The finding of this study will be presented.

## **CHAPTER IV: FINDINGS**

## **CHAPTER IV**

### **FINDINGS**

The problem of this study was to determine the types of computer technology skills needed by graduates of the Information Systems Technology program at Paul D. Camp Community College to meet the needs of entry-level technicians at Canon Information Technology Systems. In this chapter, the researcher will discuss the findings from the questionnaire.

#### **Canon Skills**

A questionnaire was developed by the researcher to address the first goal of the research problem: identify computer skills required of entry-level technicians at Canon. The questionnaire was completed by the Human Resources Department at Canon. The questionnaire consisted of four questions pertaining to the skills needed for entry-level positions at Canon.

The first question asked was, “List the titles of any entry-level technical positions.” The response identified three entry-level positions: Product Support Representative, Network Technician and Sales Administration Specialist.

The next three questions asked for the specific job skills required by the entry-level positions stated in question one. The three positions shared many of the same job skills such as knowledge of the Windows Operating System, Microsoft Office and computer hardware. The differences in job requirements were in the skills that directly related to the specific job description, such as Cisco networking in the Network Technician position.

## **Paul D. Camp Courses**

A questionnaire was developed by the researcher to address the second goal of the research problem: identify the types of computer technology courses offered in the IST program at Paul D. Camp Community College. The questionnaire consisted of two questions pertaining to the degree programs and course requirements at Paul D. Camp Community College.

The first question asked was, “What IST degree programs are currently offered?” The response identified specialty degree programs: Help Desk Support, PC Hardware and Software Support, Network Hardware and Software Support, Website Design and Administration and E-Commerce. The next question asked for the specific courses offered for each degree as stated in question one.

## **Needs and Course Alignment**

The third and final goal of this problem is to align the Canon competency needs with Paul D. Camp Community College Information Systems Technology courses. In the tables 1, 2 and 3, are the job skills required by the three entry-level positions at Canon: Product Support Representative, Network Technician and Sales Administration Specialist. The researcher then matched each job skill with the related course offered at Paul D. Camp Community College.

As shown in Table 1, of the eight job skills listed for the Product Support position at Canon, seven were covered by courses offered at Paul D. Camp Community College. The lone exception was technical writing, which was not offered in any of the course listings at Paul D. Camp Community College. This translated to a ratio of skills to courses of 87.5%.



As shown in Table 2, of the nine job skills listed for the Network Technician position at Canon, eight were covered by courses offered at Paul D. Camp Community College. The lone exception was technical writing, which was not offered in any of the course listings at Paul D. Camp Community College. This translated to a ratio of skills to courses of 88.9%.

As shown in Table 3, of the nine job skills listed for the Sales Administration Specialist position at Canon, eight were covered by courses offered at Paul D. Camp Community College. The lone exception was technical writing, which was not offered in any of the course listings at Paul D. Camp Community College. This translated to a ratio of skills to courses of 88.9%.

**Table 1. Product Support Representative Job Skills**

<b>Product Support Representative</b>	
<b>Skill Required</b>	<b>Course Reference</b>
Windows OS	IST 117, IST 220
Database	IST 117
Microsoft Office	IST 117
Computer Hardware	IST 179, IST 180, IST 216
Computer Networking	IST 202, IST 203
Peripherals	IST 179
Technical Writing	None
World Wide Web Basics	IST 128

**Table 2. Network Technician Job Skills**

<b>Network Technician</b>	
<b>Skill Required</b>	<b>Course Reference</b>
Windows OS	IST 117, IST 220
Database	IST 117
Microsoft Office	IST 117
Computer Hardware	IST 179, IST 180, IST 216
Computer Networking	IST 202, IST 203
Peripherals	IST 179
Technical Writing	None
Cisco Routing	IST 214
World Wide Web Basics	IST 128

**Table 3. Sales Administration Specialist Job Skills**

<b>Sales Administration Specialist</b>	
<b>Skill Required</b>	<b>Course Reference</b>
Windows OS	IST 117, IST 220
Database	IST 117
Microsoft Office	IST 117
Computer Hardware	IST 179, IST 180, IST 216
Computer Networking	IST 202, IST 203
Web Programming	IST 227, IST 228
Technical Writing	None
Web Design	IST 226
World Wide Web Basics	IST 128

## Summary

In this chapter, the researcher presented the findings of his research. He found that the courses offered at Paul D. Camp Community College addressed the majority of job skills required of the entry-level positions at Canon.

In Chapter V, the researcher will summarize the content of the first four chapters. He will answer research goals and draw conclusions based upon the data collected and provide recommendations based upon the results of the study for future studies.

**CHAPTER V:  
SUMMARY, CONCLUSIONS  
AND RECOMMENDATIONS**

## CHAPTER V

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter, the researcher will summarize the content of the first four chapters. He will answer research goals and draw conclusions based upon the data collected and provide recommendations based upon the results of the study for future studies.

#### Summary

The problem of this study was to determine the types of computer technology skills needed by graduates of the Information Systems Technology program at Paul D. Camp Community College to meet the needs of entry-level technicians at Canon Information Technology Systems.

The research goals were to:

1. Identify computer skills required of entry-level technicians at Canon I.T.S.
2. Identify the types of computer technology courses offered in the IST program at Paul D. Camp Community College.
3. Align the Canon competency needs with Paul D. Camp Community College Information Systems Technology courses.

The researcher, a member of the Paul D. Camp Community College Advisory Committee, felt the need to examine the types of Information Systems Technology courses being offered at the college to see if the college is meeting the needs of area employers.

Competition in the job market continues to grow more intense. Paul D. Camp Community College needs to know what skills employers are looking for in the college's Information Systems Technology graduates. Paul D. Camp Community College would like to see all of its graduates succeed by gaining meaningful employment within their field of study.

Limitations of this study included:

1. Using only one local employer, which may not provide a large enough sampling to accurately represent the whole Hampton Roads area.
2. The study will address Paul D. Camp Community College and may not be relevant to any other such institutions.
3. The study is limited to job positions at Canon I.T.S. and may not translate to other companies within the industry.

The first step of this study was to contact the Human Resources Department at Canon to ascertain their entry-level job skill requirements. The researcher then identified the Information Systems Technology curriculum at Paul D. Camp Community College.

The instruments used in this study were questionnaires. The first questionnaire used for Canon asked for job descriptions and specific computer skills required for entry-level employees. The second questionnaire used for Paul D. Camp Community College focused on programs of study and course descriptions within the Information Systems Technology Department. The questionnaires were administered in interview format.

The researcher made a list of all computer technology skills needed for each entry-level position at Canon. From the results of the questionnaire, answers were

provided by the Human Resources Department. The researcher then matched each position with an applicable program of study within the Information Systems Technology Program at Paul D. Camp Community College. Finally, the computer skills at Canon were compared to the courses description within each field of study.

## **Conclusions**

The first goal of the research study was to identify computer skills required of entry-level technicians at Canon I.T.S. These included:

- Windows OS
- Database
- Microsoft Office
- Computer Hardware
- Computer Networking
- Peripherals
- Technical Writing
- World Wide Web Basics
- Cisco Routing
- Web Programming
- Web Design

The second goal was to identify the types of computer technology courses offered in the IST program at Paul D. Camp Community College. These included:

- IST 117, Introduction to Microcomputer Software
- IST 128, Introduction to Internet Services
- IST 179, Introduction to Microcomputer Hardware.
- IST 180, Introduction to Microcomputer Hardware
- IST 182, Computer Concepts with Application
- IST 202, Networking Technologies
- IST 203, Administration of Local Area
- IST 214, Telecommunication Theory
- IST 216, Personal Computer Hardware Troubleshooting
- IST 220, Microcomputer: Operating Systems, Architecture
- IST 223, Web Page Development and Scripting
- IST 224, Web Server Management
- IST 226, Web Page Design II
- IST 227, Internet Programming I
- IST 228, Internet Programming II

- IST 229, Internet Programming Fundamentals
- IST 250, Information Center Management

To meet the final goal, the researcher aligned the Canon competency needs with Paul D. Camp Community College Information Systems Technology courses. He found that the courses offered at Paul D. Camp Community College addressed the majority of job skills required of the entry-level positions at Canon. All computer related skills, as required by Canon, are addressed within the Information Systems Technology curriculum at Paul D. Camp Community College. However, the researcher did not find a course that addressed technical writing within the Information Systems Technology curriculum at Paul D. Camp Community College.

## **Recommendations**

The researcher recommends that a course, which addresses technical writing, be added to the Information Systems Technology curriculum. This skill was required by all three entry-level positions at Canon, but it is not offered at Paul D. Camp Community College. The researcher also recommends that further research be done that includes other employers in the Hampton Roads area to determine if their needs are in line with the offerings at Paul D. Camp Community College.



## BIBLIOGRAPHY

Information Technology Association of America, 2002. *ABOUT ITAA*, [www.ita.org](http://www.ita.org).

Intel.com, 1999. *Technology and Trends*, [www.intel.com/techtrends/trends/index.htm](http://www.intel.com/techtrends/trends/index.htm).

Information Systems Technology, 2002. *Ideas for Today and Tomorrow*,

[http://www.pc.cc.va.us/Tureman/IST-Information/IST-Presentation\\_files/frame.htm](http://www.pc.cc.va.us/Tureman/IST-Information/IST-Presentation_files/frame.htm).

Canon U.S.A., 2003. *ABOUT CANON U.S.A., INC.*, [www.usa.canon.com](http://www.usa.canon.com).

Canon Handbook, 2002. Canon U.S.A. Inc.

2003-2004 College Catalog for Paul D. Camp Community College, 2003.

## **APPENDICES**

Appendix A: Canon Questionnaire

Appendix B: Paul D. Camp Community College Questionnaire



4. What are the skills required for position c.?

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